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INDUSTRY UPDATE

SMART GRID CLOUD

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A CLOUD-SHAPED FUTURE FOR SMART GRIDS

Smart grids are the inevitable future of Australia's energy sector. However, there is still also a lot of uncertainty about what direction it will take. While there are no magic crystal balls available to depict exactly what the smart grid will look like in 20 years time, it is fair to say that the energy sector will follow the path of IT trends and take to the cloud.

Cloud computing is emerging as a popular option for companies looking to quickly launch new products, enrich their customer experience and reduce IT operation costs. The cloud computing model allows many organisations to use services, without the expense and hassle of owning infrastructure. Over the past couple of years there has been a massive influx of IT players launching cloud services such as web hosting, online CRM portals and corporate communications tools. It seems everywhere you look these days, there is a new cloud option for IT applications and infrastructure. By 2013, it is expected that cloud computing will be a $150 billion global market (Gartner, *Forecast: Sizing the Cloud; Understanding the Opportunities in Cloud Services*, March 2009) and will be a major element of the future IT landscape.

The smart grid is fundamentally dependant on the roll-out of smart meters, which will collect real-time intelligence on how households or businesses are consuming data. As technology evolves, this data will be used across a number of new applications and to create better services for customers. Be it new tariffs, in-home display units,

electric cars or ideas that are yet to be conceived. The starting point of a smart grid requires having structures in place that will provide the functionality to collect and make use of this data.

It is estimated that smart meters will generate as much as 7000 times more data than electricity companies are used to dealing with as meter readings will be automated to happen nearly every 15 minutes, in comparison to the traditional once a month or once a quarter. This will create new challenges for energy companies who will now need to collect, store and use this data. For most energy companies, this will require an overhaul of current IT and organisational structures. Given the way the industry is heading it is likely that some cloud elements will be incorporated in to this transformation because it is essentially the most cost-effective option and requires less up-front expenditure. Cloud used in this context is likely to be a growing trend overseas. Australian regulation currently rewards distribution companies for increasing their capital base on programmes such as smart meters, which means decoupling ownerships of any assets could

negatively impact their business model and discourages more efficient cloud-based approaches.

Where the cloud really comes into play is its ability to accelerate change and make new ideas a reality, fast. This is why it is most likely going to be Australian retailers who will bring the cloud to the utility market as part of driving down costs to serve. By providing much greater flexibility and scalability, energy companies will be able to use cloud computing to get new products, services or tariffs to market in a matter of hours, rather than months. It's these key qualities of the cloud that are most likely to intertwine its future with smart grid because it will allow energy companies to gain a competitive advantage by quickly launching new value adding services for customers. As well as potentially reducing costs by up to 30 per cent.

What's more, the cloud provides an open environment that enables technology and information to be easily shared – if required. As the smart grid matures, information collected by energy suppliers could be used by a number of third parties. Whether its transferring consumers' consumption history when they switch retailers, supporting interactive consumer applications or perhaps providing carbon disclosure information to meet future regulatory requirements, data will need to be made available in real time, with effective rules in place to ensure information can only be accessed by the necessary parties.

Of course, the security and privacy implications of creating a cloud environment for smart grids are serious. The fact that outsiders could gather sensitive personal information from itemised technology bills is already a great concern for many customers. For example, access to information about what appliances are running can quickly confirm whether a house is empty or not. With a backlog of information it would be easy for an outsider to quickly understand a household's daily routine by using information about what appliances are used, when showers are taken, the television watched or when the family is likely to go to bed. Losing control of customers' energy consumption data could have serious ramifications for suppliers and putting this type of information into the cloud might cause further concern for customers. There has already been a lot of criticism towards Australia's early smart meter programs and time-of-use tariffs from consumers who don't understand why their current energy bills are likely to increase. Any negative press around potential loss due to security breaches of energy consumption data could ignite further consumer backlash.

The reality is that these are significant issues and energy companies need to be cautious of how they take advantage of cloud services. Companies need to fully understand the risks and benefits of using cloud elements, including where data is stored and what security measures are in place to protect data. Different data sets will have different levels of sensitivity and it is likely not all of it will be suitable for the cloud. Companies will need to complete an assessment of business needs and risks to identify where clouds can be integrated into the smart grid ecosystem and what type of cloud environment is suitable. The finished product will be a hybrid environment made up of legacy infrastructure, public cloud services, private clouds and community clouds.

Given the sensitivity of energy data, it is likely private and community clouds will be most prominent in the smart grid ecosystems. Private clouds refer to offerings that emulate cloud computing, however, are maintained on a private network to ensure increase security and reliability. By using cloud techniques, organisations can reduce upfront expenditure and gain the flexibility and scalability needed to quickly activate new services.

It is likely we are going to see a lot of community clouds in the smart grid, which is essentially a private cloud that that is owned and accessed by a number of organisations with common interests.

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The UK is already using a community cloud environment to facilitate its energy-trading scheme because it allows data to be easily collected and transmitted in real-time to relevant parties. It is easy to see why a community cloud would benefit the smart grid for its ability to support safe and reliable information sharing.

The move towards smart grids is the toughest challenge the energy sector has faced. Like the telecoms industry before it, the energy sector is on the brink of a major transformation that will put consumers and services at the heart of everyday business. Over the next 20 years the industry will undergo a metamorphosis as new technologies and players enter the market. Cloud computing will help facilitate this change by providing a cost effective and flexible IT environment that supports industry collaboration and bring to market new value adding consumer services – which is what the smart grid is all about!